

## Chapter 3

### Claims

Claims 1-24 are canceled. New claims are submitted in accordance with examiner's comments in the July 9, 2009 office action and the interview.

**Claim 25 (New)** What is claimed is the essential regime switching esg improvement of the economic scenario generator where the economic scenario generator consists of

entering data related to the process parameters into the computer using one of a plurality of a text editor, computer interface, disk, file, computer memory, external source, (or electronic means)

state variable generation on the computer, which consists of the steps of one of a plurality of initializing needed memory and using previously initial-

ized memory, iterating over scenarios using one of a plurality of computer memory and computer readable media

wherein a scenario consists of a loop over time nodes,

wherein at each time node the state variables are advanced by the steps of calculating the expected change vector in the state variables, calculating the random change by obtaining the deviates from one of a plurality of values stored in memory, values in a file, pseudo random generation with the processor of the computer, quasi random monte carlo generation with the processor of the computer, multiplying the vector of deviates by a matrix in computer memory, adding the expected and unexpected change vectors to get the total change vector, adding the total change vector to the old state vector to get the new state vector

and the improvement consists of

entering the parameters of the regime process through one of a plurality of of a text editor, computer interface, disk, file, computer memory, external source, (or electronic means)

one of a plurality of specifying the initial regime and state variable, calculating with the computer processor the initial state variables given one of a plurality of an initial regime communicated to the computer memory, calculating both the initial regime and the initial state variables using the computer processor,

substituting for the time node step

first determine a regime index by one of a plurality of use a regime index for this time node step previously calculated in memory based on the regime transition probability matrix and the previous regime index and random selection of the regime index in accordance with the regime transition probability matrix and the previous regime index

then the state variables are advanced by the steps of calculating the expected change vector in the state variables using the regime index to select the parameters in this calculation,

calculating the random change by obtaining the deviates from one of a plurality of values stored in memory, values in a file, pseudo random genera-

tion with the processor of the computer, quasi random monte carlo generation with the processor of the computer, multiplying the vector of deviates by a matrix whose elements are determined by use of the regime index to select among the parameters used to calculate the matrix in computer memory, adding the expected and unexpected change vectors to get the total change vector, adding the total change vector to the old state vector to get the new state vector

wherein there are at least two distinct regimes in that the parameter sets differ by at least one parameter in the two regimes and at least one parameter relating to a variable in the essential regime switching economic scenario generator used to calculate a rate and one parameter relating to a variable used to calculate an equity variable have values that are different in at least two regimes. ♠

**Claim 26 (New)** The method of claim 25 further comprising where a general financial variable is calculated by the computer using the regime switching economic scenarios to calculate on the computer a variable used to cal-

culate a financial payment.



**Claim 27 (New)** The method of claim 26 further comprising wherein said financial payment is used to execute a financial transaction.



**Claim 28 (New)** A computer system for the generation of regime switching economic scenarios comprising the steps of

means for generating regime scenarios of a regime at each time node in each scenario

means for generating state variable scenarios using the regime scenarios so generated at each time node in each scenario,

wherein the regime index at said time node in said scenario is used to select a set of parameters that include the parameters of the dmrp model as a subset and said parameters are used to calculate the value of the state variables at the next time node.



**Claim 29 (New)** The method of claim 28 further comprising means for calculating auxiliary data using the regimes and economic state variables so generated at each time node in each scenario



**Claim 30 (New)** The method of claim 28 further comprising means for statistical analysis of the scenarios. ♠

**Claim 31 (New)** The method of claim 28 further comprising using the regime index at each time node and the state variables at each time node to interpolate a value on a grid of dimension less than or equal to the number of state variables of one of a plurality of price grid, yield grid, financial variable grid, grid of a variable used in a financial transaction, and grid of a variable used to calculate a financial payment. ♠

**Claim 32 (New)** A computer system for the generation of regime switching economic scenarios comprising the steps of

means for generating regime scenarios of a regime at each time node in each scenario

means for generating state variable scenarios using the regime scenarios so generated at each time node in each scenario,

wherein the regime index is used to select a set of data and said data together with the state variables at a time node in a scenario are used to

calculate the value of a variable at said time node in said scenario. ♠

**Claim 33 (New)** The method of claim 32 further comprising means for calculating auxiliary data using the regimes and economic state variables so generated at each time node in each scenario ♠

**Claim 34 (New)** The method of claim 32 further comprising using the regime index at each time node and the state variables at each time node to interpolate a value on a grid of dimension less than or equal to the dimension of the state vector of one of a plurality of price grid, yield grid, financial variable grid, grid of values used in a financial transaction, and grid of a variable used to calculate a financial payment. ♠

**Claim 35 (New)** The method of claim 36 further comprising using using the green's function numerical method to calculate a set of grid values. ♠

**Claim 36 (New)** The method of claim 35 further comprising where the short term interest rate is calculated from one of a plurality of the an affine function of the state variables, a quadratic function of the state variables, an

exponential function of one of the state variables, and a polynomial function of the state variables of degree higher than two. ♠

**Claim 37 (New)** A computer system for the generation of regime switching economic scenarios comprising the steps of

means for generating regime scenarios of a regime at each time node in each scenario

means for generating state variable scenarios using the regime scenarios so generated at each time node in each scenario,

wherein the short term interest rate is calculated as the exponential of one of the state variables. ♠

**Claim 38 (New)** The method of claim 37 further comprising means for calculating auxiliary data using the regimes and economic state variables so generated at each time node in each scenario ♠

**Claim 39 (New)** The method of claim 37 further comprising using the regime index at each time node and the state variables at each time node to interpolate a value on a grid of dimension less than or equal to the number of



state variables of one of a plurality of price grid, yield grid, financial variable grid, grid of a variable used in a financial transaction, and grid of a variable used to calculate a financial payment. ♠

